



west virginia department of environmental protection

Office of Oil and Gas
601 57th Street, S.E.
Charleston, WV 25304
(304) 926-0450
fax: (304) 926-0452

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Wednesday, May 09, 2018
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
380 SOUTHPOINTE BOULEVARD, PLAZA II
SUITE 200
CANNONSBURG, PA 15317

Re: Permit Modification Approval for HEAVEN HILL 3-2HM
47-051-01962-00-00

Modified to Extend Lateral

TUG HILL OPERATING, LLC

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin
Chief

Operator's Well Number: HEAVEN HILL 3-2HM
Farm Name: RICKY L. WHITLATCH
U.S. WELL NUMBER: 47-051-01962-00-00
Horizontal 6A New Drill
Date Modification Issued: May 9, 2018

Promoting a healthy environment.

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL WORK PERMIT APPLICATION

1) Well Operator: Tug Hill Operating, LLC 494510851 Marshall Meade Glen Easton 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Heaven Hill 3-2HM Well Pad Name: Heaven Hill 3

3) Farm Name/Surface Owner: Ricky L. Whitlatch Public Road Access: Yeater Lane CR 21/11

4) Elevation, current ground: 1326' Elevation, proposed post-construction: 1326'

5) Well Type (a) Gas Oil Underground Storage
Other

(b) If Gas Shallow Deep
Horizontal

Ju
3/28/18

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus is the target formation at a depth of 6724 - 6776' thickness of 52' and anticipated pressure of approx. 3800 psi

8) Proposed Total Vertical Depth: 6,876'

9) Formation at Total Vertical Depth: Onondaga

10) Proposed Total Measured Depth: 19,081'

11) Proposed Horizontal Leg Length: 11,331'

12) Approximate Fresh Water Strata Depths: 70', 1038'

13) Method to Determine Fresh Water Depths: Offset well reports or noticeable flow at the flowline or when need to start soaping

14) Approximate Saltwater Depths: 2,167'

15) Approximate Coal Seam Depths: Sewickly Coal - 946' and Pittsburgh Coal - 1031'

16) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes No

(a) If Yes, provide Mine Info: Name: Marshall County Coal Co. / Marshall County Mine
Depth: 1031' TVD and 310' subsea level
Seam: Pittsburgh #8
Owner: Murray Energy / Consolidated Coal Co.

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WW-6B
(04/15)

API NO. 47- 051 - 01962 MOD
 OPERATOR WELL NO. Heaven Hill 3-2HM
 Well Pad Name: Heaven Hill 3

18)

CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	30"	NEW	BW	BW	120'	120'	259FT^3(CTS)
Fresh Water	13 3/8"	NEW	H40	48#	1,120'	1,120'	1128ft^3(CTS)
Coal	13 3/8"	NEW	H40	48#	1,120'	1,120'	1128ft^3(CTS)
Intermediate	9 5/8"	NEW	J55	36#	2,803'	2,803'	918ft^3(CTS)
Production	5 1/2"	NEW	P110	20#	19,081'	19,081'	4873ft^3(CTS)
Tubing	2 3/8"	NEW	N80	4.7#		7,589'	
Liners							

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3/28/18

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	13 3/8"	17 1/2"	.33	1,730	1,384	SEE #24	1.2
Coal	13 3/8"	17 1/2"	.33	1,730	1,384	SEE#24	1.2
Intermediate	9 5/8"	12 1/4"	.352	3,520	2,816	SEE#24	1.19
Production	5 1/2"	8 7/8_8 3/4	.361	12,640	10,112	SEE#24	1.17/1.19
Tubing	2 3/8"		.19	11,200	8,960		
Liners							

PACKERS

Kind:	N/A			
Sizes:	N/A			
Depths Set:	N/A			

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WW-6B
(10/14)

API NO. 47- 051 - 01962
OPERATOR WELL NO. Heaven Hill 3-2HM
Well Pad Name: Heaven Hill 3

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3/28/18

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill through the Marcellus and TD Pilot Hole 100' into the Onondaga. Log vertical section and run a solid cement plug back to proposed KOP. Drill curve and lateral per proposed well plan, run and cement production casing. Perform CBL from 60 deg to surface, make cleanout run, and stimulate.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

Well to be completed with approximately 28,327,500 lb proppant and 437,964 bbl of water. Max rate = 80 bpm; max psi = 9,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 18.43

22) Area to be disturbed for well pad only, less access road (acres): 7.15

23) Describe centralizer placement for each casing string:

Will run 3 centralizers on surface casing at equal distance. Intermediate will have 1 centralizer every other joint. Production casing will have one centralizer every other joint in lateral, one centralizer every joint through curve, one centralizer every other joint to surface.

24) Describe all cement additives associated with each cement type:

*See Attachment

25) Proposed borehole conditioning procedures:

Will circulate a minimum of 3 hours at TD, short trip to curve, circulate bottoms up, check for flow
POOH

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*Note: Attach additional sheets as needed.

WW-6B Attachment to #24

Conductor, Coal and Fresh Water Casing Cement:

Premium NE-1 + 2% CaCl

- Premium NE-1 – Class A Portland API Spec
- CaCl – Calcium Chloride

Intermediate Casing:

Premium NE-1 + 2% bwoc CaCl₂ + 46.5% Fresh Water

- Premium NE-1 – Class A Portland API spec
- CaCl₂ – Calcium Chloride
- Cello Flake – Fluid Loss Preventer

Kick Off Plug:

Class H Cement + 1% CD-32 + .7% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L + 38% Fresh Water

- Class H – Increased Compressive Strength Cement
- Sodium Metasilicate – Free Water Control; Early Strength Additive
- R-3 – Cement Retarder
- FP-13L – Anti-Foaming Agent
- CaCl₂ – Calcium Chloride
- Cello Flake – Fluid Loss Preventer

Production Casing Cement:

Lead: 50:50 (Poz:Premium NE-1) + .2% R-3 + .2% MPA-170 + .75 gal/100sk FP-13L

Tail: Premium NE-1 + .1% bwoc ASA-301 + 60lb/sk ASCA-1 + .35% bwoc BA-10A + .25% bwoc MPA-170, 44 lb sack + .5% bwoc R-3 + .75 gals/100sk FP-13L

- Poz – Fly Ash
- Premium NE-1 – Class A Portland API spec
- R-3 – Cement Retarder
- MPA-170 – Gelling Agent
- FP-13L – Anti-Foaming Agent
- ASA-301 – Free Water Control Agent
- BA-10A – Bonding Agent
- ASCA-1 – Solubility Additive

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Tug Hill Operating, LLC Casing and Cement Program

Heaven Hill 3-2HM

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	13 3/8"	H40	17 1/2"	1,120'	CTS
Intermediate	9 5/8"	J55	12 1/4"	2,803'	CTS
Production	5 1/2"	P110	8 7/8 x 8 3/4"	19,081'	CTS

Cement

Conductor:	Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Conductor Cement mixed at 15.6 ppg, Y=1.2
Surface:	Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Surface Cement mixed at 15.6 ppg, Y=1.2
Intermediate:	Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.19
Kick Off Plug:	Class H Cement + 1% CD-32 + .7% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L - KOP Plug
Production:	50:50 Poz: Premium NE-1 + .1% bwoc ASA-301 + 60lb/sk ASCA-1 + .35% bwoc BA-10A + .25% bwoc MPA-170, 44 lb sack + .5% bwoc R-3 + .75 gals/100sk FP-13L – Production Cement mixed at 15.2ppg, Y = 1.19

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Natural Production

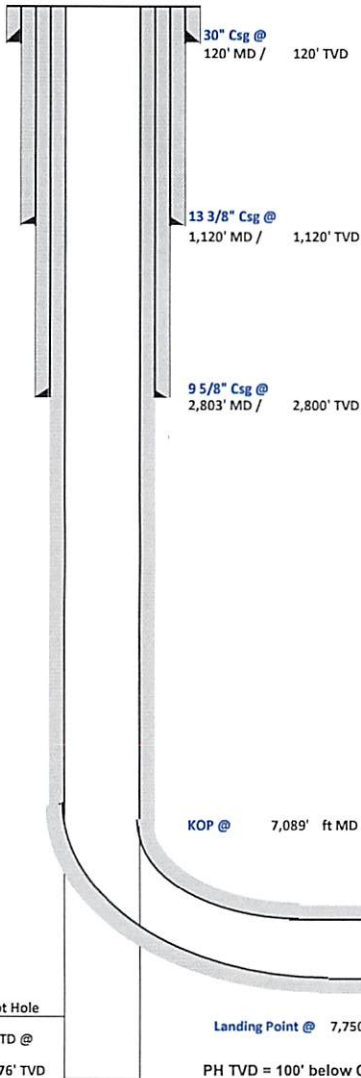


WELL NAME: Heaven Hill 3-2HM
 STATE: West Virginia COUNTY: Marshall
 DISTRICT: Meade
 DF Elev: 1,326' GL Elev: 1,326'
 TD: 19,081'
 TH Latitude: 39.80859199
 TH Longitude: -80.69327779
 BH Latitude: 39.77468933
 BH Longitude: -80.67452012

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	1038
Sewickley Coal	946
Pittsburgh Coal	1031
Big Lime	2060
Weir	2486
Berea	2684
Gordon	2946
Rhinestreet	6068
Geneseo/Burkett	6586
Tully	6617
Hamilton	6650
Marcellus	6724
Landing Depth	6879
Onondaga	6776
Pilot Hole Depth	6876

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	120'	120'	BW	BW	Surface
Surface	17.5	13 3/8	1,120'	1,120'	48	H40	Surface
Intermediate 1	12 1/4	9 5/8	2,803'	2,800'	36	J55	Surface
Production	8 7/8 x 8 3/4	5 1/2	19,081'	7,077'	20	P110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	1,142	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	896	A	15	Air	1 Centralizer every other jt
Production	4,301	A	14.5	Air / SOBM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc



Handwritten signature and date: 3/28/18

Pilot Hole
 PH TD @ 6,876' TVD
 Landing Point @ 7,750' MD / 6,879' TVD
 PH TVD = 100' below Onondaga Top

Lateral TD @ 19,081' ft MD
 7,077' ft TVD

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51-019142H0D



Well: Heaven Hill 3-2 HM (K)
 Site: Heaven Hill 3
 Project: Marshall County, West Virginia
 Design: rev7

SECTION DETAILS

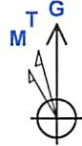
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1726.00	0.00	0.00	1726.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 2"/100' build
3	1976.00	5.00	190.00	1976.68	-10.74	-1.89	2.00	190.00	9.11	Begin 5.00° tangent
4	3130.71	5.00	190.00	3126.00	-109.85	-19.37	0.00	0.00	93.21	Begin 3"/100' build
5	4040.28	32.28	193.19	3979.76	-390.67	-82.88	3.00	3.72	325.96	Begin 32.28° tangent
6	7089.09	32.28	193.19	6557.42	-1975.86	-454.43	0.00	0.00	1634.64	Begin 10"/100' build/turn
7	7749.89	89.00	150.22	6879.00	-2493.01	-314.78	10.00	-48.21	2164.83	Begin 89.00° lateral section
8	19081.31	89.00	150.22	7077.00	-12326.32	5312.64	0.00	0.00	3422.45	PBHL/TD 19081.31 MD/7077.00 TVD

Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: NAD83 West Virginia - HARN
 Ellipsoid: GRS 1980
 Zone: Zone 17N (84 W to 78 W)

System Datum: Mean Sea Level
 Depth Reference: RKB=1326+26 @ 1352.00ust

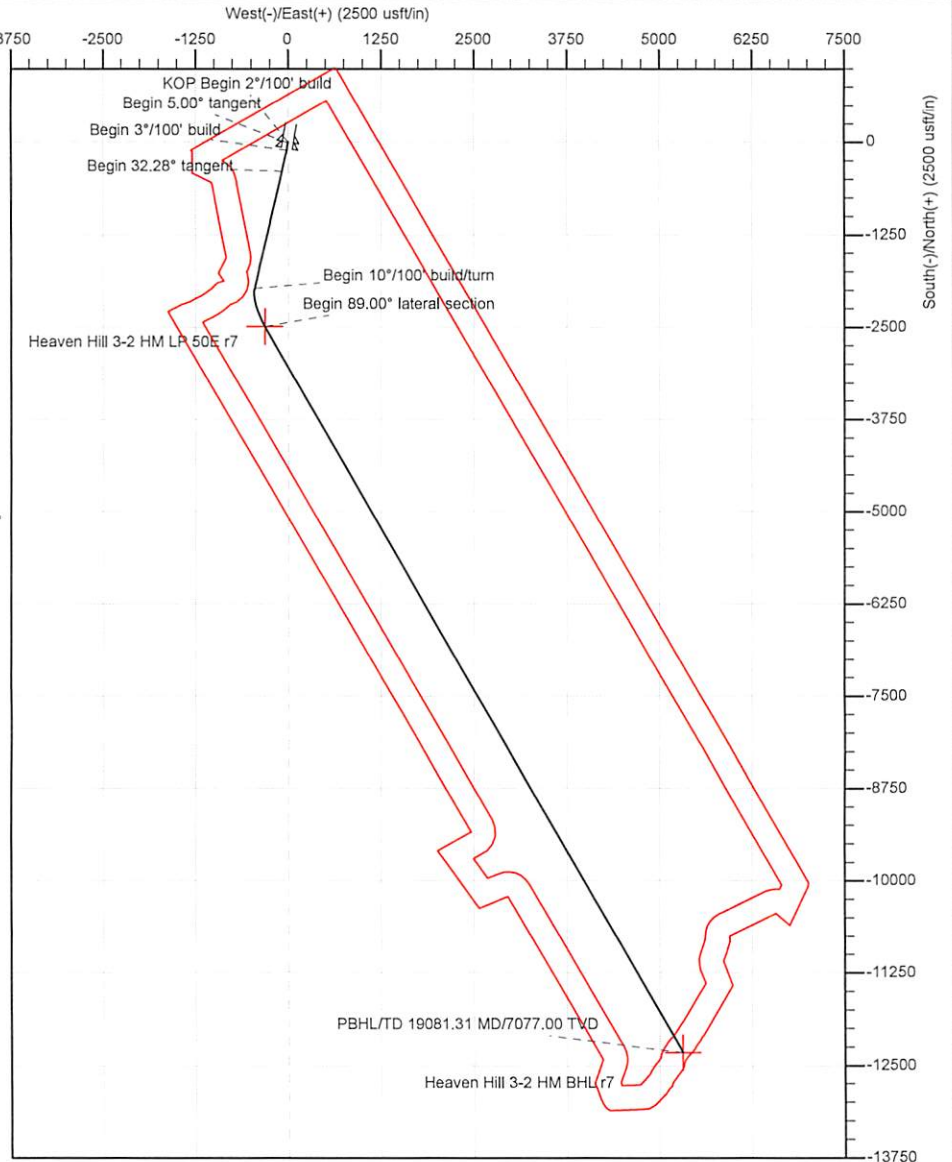
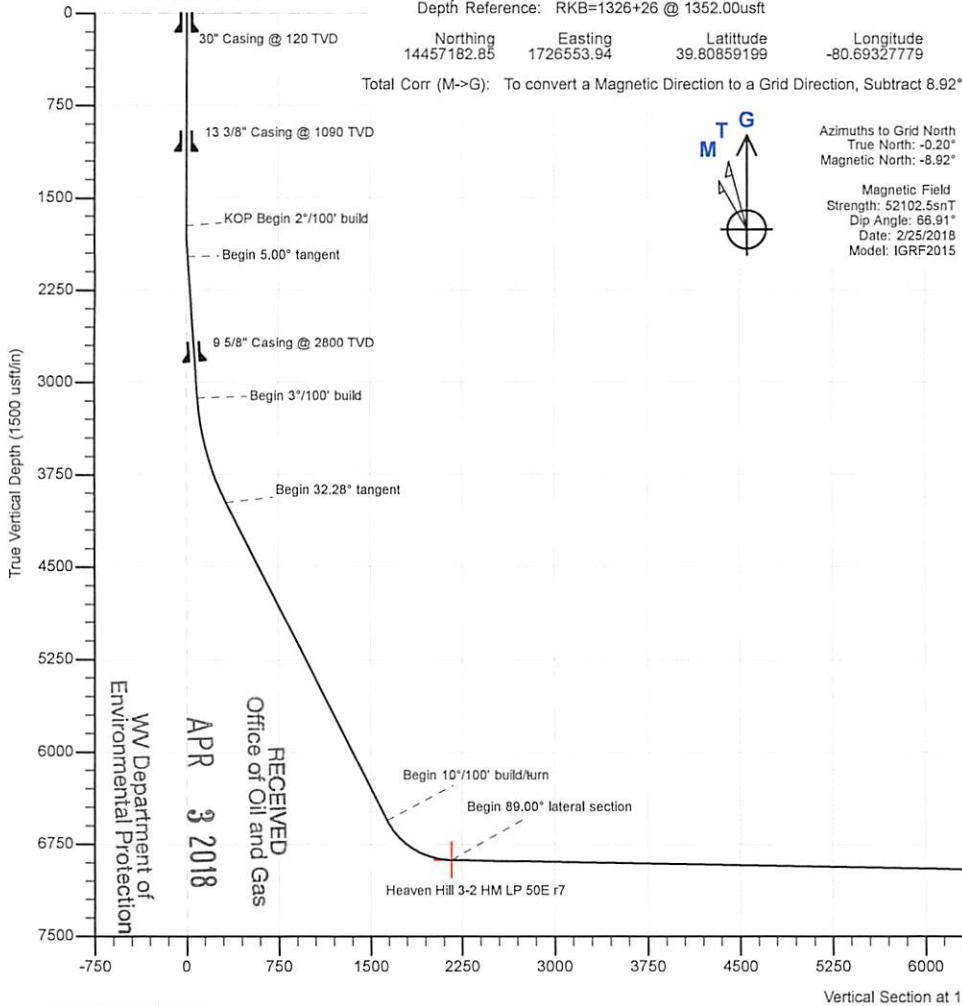
Northing 14457182.85 Easting 1726553.94 Latitude 39.80859199 Longitude -80.69327779

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.92°



Azimuths to Grid North
 True North: -0.20°
 Magnetic North: -8.92°

Magnetic Field
 Strength: 52102.5nT
 Dip Angle: 66.91°
 Date: 2/25/2018
 Model: IGRF2015



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51-01962100



Planning Report - Geographic

51-01962

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3-2 HM (K)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1326+26 @ 1352.00usft
Project:	Marshall County, West Virginia	MD Reference:	RKB=1326+26 @ 1352.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3-2 HM (K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev7		

Project	Marshall County, West Virginia		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	NAD83 West Virginia - HARN		
Map Zone:	Zone 17N (84 W to 78 W)		

Site	Heaven Hill 3				
Site Position:		Northing:	14,457,178.77 usft	Latitude:	39.80858060
From:	Lat/Long	Easting:	1,726,571.98 usft	Longitude:	-80.69321360
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.20 °

Well	Heaven Hill 3-2 HM (K)					
Well Position	+N/-S	0.00 usft	Northing:	14,457,182.85 usft	Latitude:	39.80859199
	+E/-W	0.00 usft	Easting:	1,726,553.94 usft	Longitude:	-80.69327779
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	1,326.00 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	2/25/2018	-8.72	66.91	52,102.45091203

Design	rev7			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	156.68

Plan Survey Tool Program	Date 2/25/2018			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	19,081.31 rev7 (Original Hole)	MWD	MWD - Standard

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,726.00	0.00	0.00	1,726.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,976.00	5.00	190.00	1,975.68	-10.74	-1.89	2.00	2.00	0.00	190.00	
3,130.71	5.00	190.00	3,126.00	-109.85	-19.37	0.00	0.00	0.00	0.00	
4,040.28	32.28	193.19	3,979.76	-390.67	-82.88	3.00	3.00	0.35	3.72	
7,089.09	32.28	193.19	6,557.42	-1,975.86	-454.43	0.00	0.00	0.00	0.00	
7,749.90	89.00	150.22	6,879.00	-2,493.01	-314.78	10.00	8.58	-6.50	-48.21	Heaven Hill 3-2 HM L
19,081.31	89.00	150.22	7,077.00	-12,326.32	5,312.64	0.00	0.00	0.00	0.00	Heaven Hill 3-2 HM B

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Planning Report - Geographic

51-01962 MOD

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3-2 HM (K)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1326+26 @ 1352.00usft
Project:	Marshall County, West Virginia	MD Reference:	RKB=1326+26 @ 1352.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3-2 HM (K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev7		

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Planned Survey										WV Department of Environmental Protection
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.00	0.00	0.00	0.00	14,457,182.85	1,726,553.94	39.80859199	-80.69327779	
100.00	0.00	0.00	100.00	0.00	0.00	14,457,182.85	1,726,553.94	39.80859199	-80.69327779	
200.00	0.00	0.00	200.00	0.00	0.00	14,457,182.85	1,726,553.94	39.80859199	-80.69327779	
300.00	0.00	0.00	300.00	0.00	0.00	14,457,182.85	1,726,553.94	39.80859199	-80.69327779	
400.00	0.00	0.00	400.00	0.00	0.00	14,457,182.85	1,726,553.94	39.80859199	-80.69327779	
500.00	0.00	0.00	500.00	0.00	0.00	14,457,182.85	1,726,553.94	39.80859199	-80.69327779	
600.00	0.00	0.00	600.00	0.00	0.00	14,457,182.85	1,726,553.94	39.80859199	-80.69327779	
700.00	0.00	0.00	700.00	0.00	0.00	14,457,182.85	1,726,553.94	39.80859199	-80.69327779	
800.00	0.00	0.00	800.00	0.00	0.00	14,457,182.85	1,726,553.94	39.80859199	-80.69327779	
900.00	0.00	0.00	900.00	0.00	0.00	14,457,182.85	1,726,553.94	39.80859199	-80.69327779	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,457,182.85	1,726,553.94	39.80859199	-80.69327779	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,457,182.85	1,726,553.94	39.80859199	-80.69327779	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,457,182.85	1,726,553.94	39.80859199	-80.69327779	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,457,182.85	1,726,553.94	39.80859199	-80.69327779	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,457,182.85	1,726,553.94	39.80859199	-80.69327779	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,457,182.85	1,726,553.94	39.80859199	-80.69327779	
1,600.00	0.00	0.00	1,600.00	0.00	0.00	14,457,182.85	1,726,553.94	39.80859199	-80.69327779	
1,700.00	0.00	0.00	1,700.00	0.00	0.00	14,457,182.85	1,726,553.94	39.80859199	-80.69327779	
1,726.00	0.00	0.00	1,726.00	0.00	0.00	14,457,182.85	1,726,553.94	39.80859199	-80.69327779	
KOP Begin 2°/100' build										
1,800.00	1.48	190.00	1,799.99	-0.94	-0.17	14,457,181.91	1,726,553.78	39.80858941	-80.69327839	
1,900.00	3.48	190.00	1,899.89	-5.20	-0.92	14,457,177.65	1,726,553.03	39.80857771	-80.69328112	
1,976.00	5.00	190.00	1,975.68	-10.74	-1.89	14,457,172.12	1,726,552.05	39.80856253	-80.69328466	
Begin 5.00° tangent										
2,000.00	5.00	190.00	1,999.59	-12.80	-2.26	14,457,170.06	1,726,551.69	39.80855687	-80.69328598	
2,100.00	5.00	190.00	2,099.21	-21.38	-3.77	14,457,161.47	1,726,550.17	39.80853332	-80.69329147	
2,200.00	5.00	190.00	2,198.83	-29.96	-5.28	14,457,152.89	1,726,548.66	39.80850976	-80.69329696	
2,300.00	5.00	190.00	2,298.45	-38.55	-6.80	14,457,144.31	1,726,547.15	39.80848620	-80.69330246	
2,400.00	5.00	190.00	2,398.07	-47.13	-8.31	14,457,135.72	1,726,545.63	39.80846264	-80.69330796	
2,500.00	5.00	190.00	2,497.69	-55.71	-9.82	14,457,127.14	1,726,544.12	39.80843909	-80.69331345	
2,600.00	5.00	190.00	2,597.31	-64.29	-11.34	14,457,118.56	1,726,542.61	39.80841553	-80.69331894	
2,700.00	5.00	190.00	2,696.93	-72.88	-12.85	14,457,109.97	1,726,541.09	39.80839197	-80.69332444	
2,800.00	5.00	190.00	2,796.55	-81.46	-14.36	14,457,101.39	1,726,539.58	39.80836842	-80.69332993	
2,900.00	5.00	190.00	2,896.17	-90.04	-15.88	14,457,092.81	1,726,538.07	39.80834486	-80.69333542	
3,000.00	5.00	190.00	2,995.79	-98.63	-17.39	14,457,084.22	1,726,536.55	39.80832130	-80.69334092	
3,100.00	5.00	190.00	3,095.41	-107.21	-18.90	14,457,075.64	1,726,535.04	39.80829774	-80.69334641	
3,130.71	5.00	190.00	3,126.00	-109.85	-19.37	14,457,073.01	1,726,534.57	39.80829051	-80.69334810	
Begin 3°/100' build										
3,200.00	7.08	191.09	3,194.90	-117.01	-20.71	14,457,065.84	1,726,533.23	39.80827085	-80.69335298	
3,300.00	10.07	191.88	3,293.77	-131.61	-23.70	14,457,051.24	1,726,530.24	39.80823077	-80.69336379	
3,400.00	13.07	192.31	3,391.73	-151.23	-27.91	14,457,031.63	1,726,526.03	39.80817695	-80.69337903	
3,500.00	16.07	192.58	3,488.50	-175.79	-33.34	14,457,007.06	1,726,520.60	39.80810955	-80.69339865	
3,600.00	19.07	192.77	3,583.82	-205.24	-39.97	14,456,977.61	1,726,513.98	39.80802873	-80.69342261	
3,700.00	22.07	192.91	3,677.44	-239.49	-47.77	14,456,943.36	1,726,506.17	39.80793474	-80.69345083	
3,800.00	25.07	193.01	3,769.08	-278.46	-56.74	14,456,904.40	1,726,497.20	39.80782782	-80.69348324	
3,900.00	28.07	193.10	3,858.51	-322.02	-66.85	14,456,860.83	1,726,487.10	39.80770826	-80.69351975	
4,000.00	31.07	193.17	3,945.48	-370.08	-78.06	14,456,812.78	1,726,475.88	39.80757641	-80.69356025	
4,040.28	32.28	193.19	3,979.76	-390.67	-82.88	14,456,792.18	1,726,471.06	39.80751990	-80.69357768	
Begin 32.28° tangent										
4,100.00	32.28	193.19	4,030.25	-421.72	-90.16	14,456,761.13	1,726,463.78	39.80743470	-80.69360397	
4,200.00	32.28	193.19	4,114.79	-473.71	-102.35	14,456,709.14	1,726,451.60	39.80729202	-80.69364800	
4,300.00	32.28	193.19	4,199.34	-525.71	-114.53	14,456,657.14	1,726,439.41	39.80714935	-80.69369202	
4,400.00	32.28	193.19	4,283.89	-577.70	-126.72	14,456,605.15	1,726,427.22	39.80700668	-80.69373605	
4,500.00	32.28	193.19	4,368.43	-629.69	-138.91	14,456,553.16	1,726,415.04	39.80686400	-80.69378008	

51-01962
MON



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3-2 HM (K)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1326+26 @ 1352.00usft
Project:	Marshall County, West Virginia	MD Reference:	RKB=1326+26 @ 1352.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3-2 HM (K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev7		

Office of Oil and Gas
APR 3 2018

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
4,600.00	32.28	193.19	4,452.98	-681.69	-151.09	14,456,501.16	1,726,402.85	39.80672133	-80.69382411	
4,700.00	32.28	193.19	4,537.53	-733.68	-163.28	14,456,449.17	1,726,390.66	39.80657866	-80.69386813	
4,800.00	32.28	193.19	4,622.07	-785.68	-175.47	14,456,397.18	1,726,378.48	39.80643598	-80.69391216	
4,900.00	32.28	193.19	4,706.62	-837.67	-187.65	14,456,345.18	1,726,366.29	39.80629331	-80.69395619	
5,000.00	32.28	193.19	4,791.17	-889.66	-199.84	14,456,293.19	1,726,354.10	39.80615064	-80.69400021	
5,100.00	32.28	193.19	4,875.71	-941.66	-212.03	14,456,241.19	1,726,341.92	39.80600796	-80.69404424	
5,200.00	32.28	193.19	4,960.26	-993.65	-224.21	14,456,189.20	1,726,329.73	39.80586529	-80.69408827	
5,300.00	32.28	193.19	5,044.81	-1,045.65	-236.40	14,456,137.21	1,726,317.54	39.80572261	-80.69413229	
5,400.00	32.28	193.19	5,129.35	-1,097.64	-248.59	14,456,085.21	1,726,305.35	39.80557994	-80.69417632	
5,500.00	32.28	193.19	5,213.90	-1,149.63	-260.77	14,456,033.22	1,726,293.17	39.80543727	-80.69422034	
5,600.00	32.28	193.19	5,298.45	-1,201.63	-272.96	14,455,981.22	1,726,280.98	39.80529459	-80.69426437	
5,700.00	32.28	193.19	5,382.99	-1,253.62	-285.15	14,455,929.23	1,726,268.79	39.80515192	-80.69430840	
5,800.00	32.28	193.19	5,467.54	-1,305.61	-297.34	14,455,877.24	1,726,256.61	39.80500925	-80.69435242	
5,900.00	32.28	193.19	5,552.09	-1,357.61	-309.52	14,455,825.24	1,726,244.42	39.80486657	-80.69439645	
6,000.00	32.28	193.19	5,636.63	-1,409.60	-321.71	14,455,773.25	1,726,232.23	39.80472390	-80.69444047	
6,100.00	32.28	193.19	5,721.18	-1,461.60	-333.90	14,455,721.26	1,726,220.05	39.80458123	-80.69448449	
6,200.00	32.28	193.19	5,805.73	-1,513.59	-346.08	14,455,669.26	1,726,207.86	39.80443855	-80.69452852	
6,300.00	32.28	193.19	5,890.27	-1,565.58	-358.27	14,455,617.27	1,726,195.67	39.80429588	-80.69457254	
6,400.00	32.28	193.19	5,974.82	-1,617.58	-370.46	14,455,565.27	1,726,183.49	39.80415321	-80.69461657	
6,500.00	32.28	193.19	6,059.37	-1,669.57	-382.64	14,455,513.28	1,726,171.30	39.80401053	-80.69466059	
6,600.00	32.28	193.19	6,143.91	-1,721.57	-394.83	14,455,461.29	1,726,159.11	39.80386786	-80.69470461	
6,700.00	32.28	193.19	6,228.46	-1,773.56	-407.02	14,455,409.29	1,726,146.93	39.80372518	-80.69474864	
6,800.00	32.28	193.19	6,313.01	-1,825.55	-419.20	14,455,357.30	1,726,134.74	39.80358251	-80.69479266	
6,900.00	32.28	193.19	6,397.55	-1,877.55	-431.39	14,455,305.31	1,726,122.55	39.80343984	-80.69483668	
7,000.00	32.28	193.19	6,482.10	-1,929.54	-443.58	14,455,253.31	1,726,110.37	39.80329716	-80.69488071	
7,089.09	32.28	193.19	6,557.42	-1,975.86	-454.43	14,455,206.99	1,726,099.51	39.80317005	-80.69491993	
Begin 10°/100' build/turn										
7,100.00	33.01	191.70	6,566.61	-1,981.61	-455.70	14,455,201.24	1,726,098.24	39.80315428	-80.69492451	
7,200.00	40.43	180.41	6,646.80	-2,040.86	-461.47	14,455,141.99	1,726,092.47	39.80299162	-80.69494578	
7,300.00	48.64	172.25	6,718.08	-2,110.65	-456.63	14,455,072.20	1,726,097.31	39.80279992	-80.69492939	
7,400.00	57.30	165.96	6,778.28	-2,188.85	-441.33	14,454,994.00	1,726,112.62	39.80258500	-80.69487584	
7,500.00	66.22	160.81	6,825.58	-2,273.10	-416.02	14,454,909.75	1,726,137.92	39.80235341	-80.69478676	
7,600.00	75.28	156.33	6,858.53	-2,360.82	-381.48	14,454,822.03	1,726,172.46	39.80211217	-80.69466485	
7,700.00	84.42	152.21	6,876.14	-2,449.37	-338.76	14,454,733.49	1,726,215.18	39.80186861	-80.69451382	
7,749.89	89.00	150.22	6,879.00	-2,493.00	-314.78	14,454,689.85	1,726,239.16	39.80174855	-80.69442898	
Begin 89.00° lateral section										
7,800.00	89.00	150.22	6,879.88	-2,536.49	-289.90	14,454,646.36	1,726,264.05	39.80162889	-80.69434090	
7,900.00	89.00	150.22	6,881.62	-2,623.27	-240.23	14,454,559.58	1,726,313.71	39.80139011	-80.69416514	
8,000.00	89.00	150.22	6,883.37	-2,710.05	-190.57	14,454,472.80	1,726,363.37	39.80115132	-80.69398938	
8,100.00	89.00	150.22	6,885.12	-2,796.83	-140.91	14,454,386.03	1,726,413.03	39.80091254	-80.69381362	
8,200.00	89.00	150.22	6,886.87	-2,883.61	-91.25	14,454,299.25	1,726,462.69	39.80067376	-80.69363786	
8,300.00	89.00	150.22	6,888.61	-2,970.38	-41.59	14,454,212.47	1,726,512.36	39.80043497	-80.69346210	
8,400.00	89.00	150.22	6,890.36	-3,057.16	8.08	14,454,125.69	1,726,562.02	39.80019619	-80.69328634	
8,500.00	89.00	150.22	6,892.11	-3,143.94	57.74	14,454,038.91	1,726,611.68	39.79995740	-80.69311058	
8,600.00	89.00	150.22	6,893.85	-3,230.72	107.40	14,453,952.13	1,726,661.34	39.79971862	-80.69293483	
8,700.00	89.00	150.22	6,895.60	-3,317.50	157.06	14,453,865.35	1,726,711.00	39.79947983	-80.69275907	
8,800.00	89.00	150.22	6,897.35	-3,404.28	206.72	14,453,778.57	1,726,760.67	39.79924105	-80.69258332	
8,900.00	89.00	150.22	6,899.10	-3,491.06	256.39	14,453,691.79	1,726,810.33	39.79900226	-80.69240757	
9,000.00	89.00	150.22	6,900.84	-3,577.84	306.05	14,453,605.01	1,726,859.99	39.79876348	-80.69223182	
9,100.00	89.00	150.22	6,902.59	-3,664.62	355.71	14,453,518.23	1,726,909.65	39.79852469	-80.69205607	
9,200.00	89.00	150.22	6,904.34	-3,751.40	405.37	14,453,431.45	1,726,959.32	39.79828590	-80.69188032	
9,300.00	89.00	150.22	6,906.09	-3,838.18	455.03	14,453,344.68	1,727,008.98	39.79804712	-80.69170458	
9,400.00	89.00	150.22	6,907.83	-3,924.96	504.70	14,453,257.90	1,727,058.64	39.79780833	-80.69152883	
9,500.00	89.00	150.22	6,909.58	-4,011.73	554.36	14,453,171.12	1,727,108.30	39.79756954	-80.69135309	



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3-2 HM (K)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1326+26 @ 1352.00usft
Project:	Marshall County, West Virginia	MD Reference:	RKB=1326+26 @ 1352.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3-2 HM (K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev7		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
15,100.00	89.00	150.22	7,007.43	-8,871.37	3,335.44	14,448,311.48	1,729,889.38	39.78419702	-80.68151335	
15,200.00	89.00	150.22	7,009.18	-8,958.15	3,385.10	14,448,224.70	1,729,939.04	39.78395822	-80.68133767	
15,300.00	89.00	150.22	7,010.93	-9,044.93	3,434.76	14,448,137.93	1,729,988.70	39.78371941	-80.68116200	
15,400.00	89.00	150.22	7,012.67	-9,131.71	3,484.42	14,448,051.15	1,730,038.37	39.78348061	-80.68098633	
15,500.00	89.00	150.22	7,014.42	-9,218.48	3,534.09	14,447,964.37	1,730,088.03	39.78324181	-80.68081066	
15,600.00	89.00	150.22	7,016.17	-9,305.26	3,583.75	14,447,877.59	1,730,137.69	39.78300300	-80.68063499	
15,700.00	89.00	150.22	7,017.92	-9,392.04	3,633.41	14,447,790.81	1,730,187.35	39.78276420	-80.68045932	
15,800.00	89.00	150.22	7,019.66	-9,478.82	3,683.07	14,447,704.03	1,730,237.01	39.78252539	-80.68028365	
15,900.00	89.00	150.22	7,021.41	-9,565.60	3,732.73	14,447,617.25	1,730,286.68	39.78228659	-80.68010798	
16,000.00	89.00	150.22	7,023.16	-9,652.38	3,782.40	14,447,530.47	1,730,336.34	39.78204778	-80.67993232	
16,100.00	89.00	150.22	7,024.91	-9,739.16	3,832.06	14,447,443.69	1,730,386.00	39.78180898	-80.67975665	
16,200.00	89.00	150.22	7,026.65	-9,825.94	3,881.72	14,447,356.91	1,730,435.66	39.78157017	-80.67958099	
16,300.00	89.00	150.22	7,028.40	-9,912.72	3,931.38	14,447,270.13	1,730,485.32	39.78133137	-80.67940533	
16,400.00	89.00	150.22	7,030.15	-9,999.50	3,981.04	14,447,183.36	1,730,534.99	39.78109256	-80.67922967	
16,500.00	89.00	150.22	7,031.90	-10,086.28	4,030.71	14,447,096.58	1,730,584.65	39.78085375	-80.67905401	
16,600.00	89.00	150.22	7,033.64	-10,173.06	4,080.37	14,447,009.80	1,730,634.31	39.78061495	-80.67887835	
16,700.00	89.00	150.22	7,035.39	-10,259.83	4,130.03	14,446,923.02	1,730,683.97	39.78037614	-80.67870269	
16,800.00	89.00	150.22	7,037.14	-10,346.61	4,179.69	14,446,836.24	1,730,733.64	39.78013733	-80.67852704	
16,900.00	89.00	150.22	7,038.88	-10,433.39	4,229.35	14,446,749.46	1,730,783.30	39.77989853	-80.67835138	
17,000.00	89.00	150.22	7,040.63	-10,520.17	4,279.02	14,446,662.68	1,730,832.96	39.77965972	-80.67817573	
17,100.00	89.00	150.22	7,042.38	-10,606.95	4,328.68	14,446,575.90	1,730,882.62	39.77942091	-80.67800008	
17,200.00	89.00	150.22	7,044.13	-10,693.73	4,378.34	14,446,489.12	1,730,932.28	39.77918210	-80.67782443	
17,300.00	89.00	150.22	7,045.87	-10,780.51	4,428.00	14,446,402.34	1,730,981.95	39.77894329	-80.67764878	
17,400.00	89.00	150.22	7,047.62	-10,867.29	4,477.67	14,446,315.56	1,731,031.61	39.77870448	-80.67747313	
17,500.00	89.00	150.22	7,049.37	-10,954.07	4,527.33	14,446,228.78	1,731,081.27	39.77846568	-80.67729748	
17,600.00	89.00	150.22	7,051.12	-11,040.85	4,576.99	14,446,142.01	1,731,130.93	39.77822687	-80.67712184	
17,700.00	89.00	150.22	7,052.86	-11,127.63	4,626.65	14,446,055.23	1,731,180.59	39.77798806	-80.67694619	
17,800.00	89.00	150.22	7,054.61	-11,214.40	4,676.31	14,445,968.45	1,731,230.26	39.77774925	-80.67677055	
17,900.00	89.00	150.22	7,056.36	-11,301.18	4,725.98	14,445,881.67	1,731,279.92	39.77751044	-80.67659490	
18,000.00	89.00	150.22	7,058.11	-11,387.96	4,775.64	14,445,794.89	1,731,329.58	39.77727163	-80.67641926	
18,100.00	89.00	150.22	7,059.85	-11,474.74	4,825.30	14,445,708.11	1,731,379.24	39.77703282	-80.67624362	
18,200.00	89.00	150.22	7,061.60	-11,561.52	4,874.96	14,445,621.33	1,731,428.90	39.77679400	-80.67606799	
18,300.00	89.00	150.22	7,063.35	-11,648.30	4,924.62	14,445,534.55	1,731,478.57	39.77655519	-80.67589235	
18,400.00	89.00	150.22	7,065.10	-11,735.08	4,974.29	14,445,447.77	1,731,528.23	39.77631638	-80.67571671	
18,500.00	89.00	150.22	7,066.84	-11,821.86	5,023.95	14,445,360.99	1,731,577.89	39.77607757	-80.67554108	
18,600.00	89.00	150.22	7,068.59	-11,908.64	5,073.61	14,445,274.21	1,731,627.55	39.77583876	-80.67536544	
18,700.00	89.00	150.22	7,070.34	-11,995.42	5,123.27	14,445,187.43	1,731,677.22	39.77559995	-80.67518981	
18,800.00	89.00	150.22	7,072.08	-12,082.20	5,172.93	14,445,100.66	1,731,726.88	39.77536113	-80.67501418	
18,900.00	89.00	150.22	7,073.83	-12,168.98	5,222.60	14,445,013.88	1,731,776.54	39.77512232	-80.67483855	
19,000.00	89.00	150.22	7,075.58	-12,255.75	5,272.26	14,444,927.10	1,731,826.20	39.77488351	-80.67466292	
19,081.31	89.00	150.22	7,077.00	-12,326.31	5,312.64	14,444,856.54	1,731,866.58	39.77468933	-80.67452012	

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APR 3 2018

51-01962
MOB



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3-2 HM (K)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1326+26 @ 1352.00usft
Project:	Marshall County, West Virginia	MD Reference:	RKB=1326+26 @ 1352.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3-2 HM (K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev7		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
Heaven Hill 3-2 HM LP 5 - plan hits target center - Point	0.00	0.00	6,879.00	-2,493.01	-314.78	14,454,689.84	1,726,239.16	39.80174853	-80.69442897
Heaven Hill 3-2 HM BHL - plan hits target center - Point	0.00	0.00	7,077.00	-12,326.32	5,312.64	14,444,856.53	1,731,866.58	39.77468932	-80.67452011

Casing Points					
Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter	
(usft)	(usft)		(")	(")	
146.00	146.00	30" Casing @ 120 TVD	30	36	
1,116.00	1,116.00	13 3/8" Casing @ 1090 TVD	13-3/8	17-1/2	
2,829.57	2,826.00	9 5/8" Casing @ 2800 TVD	9-5/8	12-1/4	

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(usft)	(usft)	+N/-S	+E/-W		
		(usft)	(usft)		
1,726.00	1,726.00	0.00	0.00	KOP Begin 2°/100' build	
1,976.00	1,975.68	-10.74	-1.89	Begin 5.00° tangent	
3,130.71	3,126.00	-109.85	-19.37	Begin 3°/100' build	
4,040.28	3,979.76	-390.67	-82.88	Begin 32.28° tangent	
7,089.09	6,557.42	-1,975.86	-454.43	Begin 10°/100' build/turn	
7,749.89	6,879.00	-2,493.00	-314.78	Begin 89.00° lateral section	
19,081.31	7,077.00	-12,326.31	5,312.64	PBHL/TD 19081.31 MD/7077.00 TVD	

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(5/13)

Operator's Well No. Heaven Hill 3-2HM

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6A, Section 5(a)(5)
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
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*See Attached pages

**Acknowledgement of Possible Permitting/Approval
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: Tug Hill Operating, LLC
 By: Amy L. Miller *Amy Miller*
 Its: Permitting Specialist - Appalachia Region

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WW-6A1 Supplement

Operator's Well No. Heaven Hill 3 - 2HM

Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*15557	A	9-7-30	RICKY L WHITLATCH ET AL	CHEVRON USA INC	1/8+	780 226	N/A	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15557	B	9-7-21	RICKY L WHITLATCH ET AL	CHEVRON USA INC	1/8+	780 226	N/A	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15667	C	9-7-18	KEVIN E MCGILTON ET UX	CHEVRON USA INC	1/8+	850 351	N/A	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15698	C	9-7-18	ROBERT A EDGE AND SHERRIE N EDGE	TH EXPLORATION LLC	1/8+	900 363	N/A	N/A	N/A	N/A	N/A	N/A
10*15720	C	9-7-18	KAREN L GREATHOUSE AND FLOYD GREATHOUSE	TH EXPLORATION LLC	1/8+	905 458	N/A	N/A	N/A	N/A	N/A	N/A
10*15721	C	9-7-18	TINA L EDGE MONTI AND THOMAS MONTI	TH EXPLORATION LLC	1/8+	905 456	N/A	N/A	N/A	N/A	N/A	N/A
10*16020	C	9-7-18	SHARON HINERMAN MAY & DANIEL G MAY	TH EXPLORATION LLC	1/8+	905 464	N/A	N/A	N/A	N/A	N/A	N/A
10*16028	C	9-7-18	ROSEMARY PARKINS AND STEPHEN PARKINS	TH EXPLORATION LLC	1/8+	905 460	N/A	N/A	N/A	N/A	N/A	N/A
10*16051	C	9-7-18	DONNA JEAN SNIDER AND DAVID SNIDER	TH EXPLORATION LLC	1/8+	905 462	N/A	N/A	N/A	N/A	N/A	N/A
10*16053	C	9-7-18	GARY D HINERMAN AND JUDY ANN HINERMAN	TH EXPLORATION LLC	1/8+	905 466	N/A	N/A	N/A	N/A	N/A	N/A
10*16289	C	9-7-18	BRENDA HINERMAN WILLIAMSON AND BRIAN K WILLIAMSON	TH EXPLORATION LLC	1/8+	905 468	N/A	N/A	N/A	N/A	N/A	N/A
10*16412	C	9-7-18	ELIZABETH ANN BLAZER AND PAUL R BLAZER	TH EXPLORATION LLC	1/8+	905 452	N/A	N/A	N/A	N/A	N/A	N/A
10*16413	C	9-7-18	RONALD H EDGE JR	TH EXPLORATION LLC	1/8+	905 454	N/A	N/A	N/A	N/A	N/A	N/A
10*15667	D	9-7-20	KEVIN E MCGILTON ET UX	CHEVRON USA INC	1/8+	850 351	N/A	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15698	D	9-7-20	ROBERT A EDGE AND SHERRIE N EDGE	TH EXPLORATION LLC	1/8+	900 363	N/A	N/A	N/A	N/A	N/A	N/A
10*15720	D	9-7-20	KAREN L GREATHOUSE AND FLOYD GREATHOUSE	TH EXPLORATION LLC	1/8+	905 458	N/A	N/A	N/A	N/A	N/A	N/A
10*15721	D	9-7-20	TINA L EDGE MONTI AND THOMAS MONTI	TH EXPLORATION LLC	1/8+	905 456	N/A	N/A	N/A	N/A	N/A	N/A
10*16020	D	9-7-20	SHARON HINERMAN MAY & DANIEL G MAY	TH EXPLORATION LLC	1/8+	905 464	N/A	N/A	N/A	N/A	N/A	N/A
10*16028	D	9-7-20	ROSEMARY PARKINS AND STEPHEN PARKINS	TH EXPLORATION LLC	1/8+	905 460	N/A	N/A	N/A	N/A	N/A	N/A
10*16051	D	9-7-20	DONNA JEAN SNIDER AND DAVID SNIDER	TH EXPLORATION LLC	1/8+	905 462	N/A	N/A	N/A	N/A	N/A	N/A
10*16053	D	9-7-20	GARY D HINERMAN AND JUDY ANN HINERMAN	TH EXPLORATION LLC	1/8+	905 466	N/A	N/A	N/A	N/A	N/A	N/A
10*16289	D	9-7-20	BRENDA HINERMAN WILLIAMSON AND BRIAN K WILLIAMSON	TH EXPLORATION LLC	1/8+	905 468	N/A	N/A	N/A	N/A	N/A	N/A
10*16412	D	9-7-20	ELIZABETH ANN BLAZER AND PAUL R BLAZER	TH EXPLORATION LLC	1/8+	905 452	N/A	N/A	N/A	N/A	N/A	N/A
10*16413	D	9-7-20	RONALD H EDGE JR	TH EXPLORATION LLC	1/8+	905 454	N/A	N/A	N/A	N/A	N/A	N/A
10*15667	E	9-7-19	KEVIN E MCGILTON ET UX	CHEVRON USA INC	1/8+	850 351	N/A	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15669	F	9-11-6.1	EMMA ANDERSON	CHEVRON USA INC	1/8+	861 586	N/A	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15670	F	9-11-6.1	GARY M BONAR AND ELLEN L BONAR	CHEVRON USA INC	1/8+	861 577	N/A	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15671	F	9-11-6.1	JUDALENE K COLLUMS	CHEVRON USA INC	1/8+	861 571	N/A	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15672	F	9-11-6.1	NAOMI HUPP	CHEVRON USA INC	1/8+	861 604	N/A	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*47051.256.1	F	9-11-6.1	BRENDA J WHETZEL	TH EXPLORATION LLC	1/8+	881 145	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.256.2	F	9-11-6.1	CAROL JEAN ANDERSON	TH EXPLORATION LLC	1/8+	879 299	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.256.3	F	9-11-6.1	BRENDA S DYKHOUSE	TH EXPLORATION LLC	1/8+	881 148	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.256.4	F	9-11-6.1	GLEN A BONAR	TH EXPLORATION LLC	1/8+	881 151	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.256.5	F	9-11-6.1	JERRY W ZIEN AND KATHLEEN E ZIEN	TH EXPLORATION LLC	1/8+	882 530	N/A	N/A	N/A	N/A	N/A	N/A
10*15669	G	9-11-6	EMMA ANDERSON	CHEVRON USA INC	1/8+	861 586	N/A	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15670	G	9-11-6	GARY M BONAR AND ELLEN L BONAR	CHEVRON USA INC	1/8+	861 577	N/A	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15671	G	9-11-6	JUDALENE K COLLUMS	CHEVRON USA INC	1/8+	861 571	N/A	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15672	G	9-11-6	NAOMI HUPP	CHEVRON USA INC	1/8+	861 604	N/A	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*47051.256.1	G	9-11-6	BRENDA J WHETZEL	TH EXPLORATION LLC	1/8+	881 145	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.256.2	G	9-11-6	CAROL JEAN ANDERSON	TH EXPLORATION LLC	1/8+	879 299	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.256.3	G	9-11-6	BRENDA S DYKHOUSE	TH EXPLORATION LLC	1/8+	881 148	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.256.4	G	9-11-6	GLEN A BONAR	TH EXPLORATION LLC	1/8+	881 151	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.256.5	G	9-11-6	JERRY W ZIEN AND KATHLEEN E ZIEN	TH EXPLORATION LLC	1/8+	882 530	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.108.1	H	9-11-9	MICHAEL A WHETZEL	TH EXPLORATION LLC	1/8+	885 51	N/A	N/A	N/A	N/A	N/A	N/A
10*15582	I	9-11-10	ROBERT L CLARK	CHESAPEAKE APPALACHIA LL	1/8+	685 239	N/A	N/A	N/A	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
10*15559	J	9-11-11	KENNETH M MCCARDLE ET UX REV LT	CHEVRON USA INC	1/8+	816 499	N/A	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15477	K	9-14-18	RONALD A WYCINSKI	TH EXPLORATION LLC	1/8+	906 241	N/A	N/A	N/A	N/A	N/A	N/A
10*15730	K	9-14-18	FRANCES V CARPENTER	TH EXPLORATION LLC	1/8+	906 256	N/A	N/A	N/A	N/A	N/A	N/A
10*15752	K	9-14-18	KIM O CHAMBERS AND DEBRA CHAMBERS	TH EXPLORATION LLC	1/8+	906 258	N/A	N/A	N/A	N/A	N/A	N/A
10*16017	K	9-14-18	FLOYD A MCFADDEN	TH EXPLORATION LLC	1/8+	906 260	N/A	N/A	N/A	N/A	N/A	N/A
10*16018	K	9-14-18	BARBARA MCFADDEN ALBRIGHT	TH EXPLORATION LLC	1/8+	906 262	N/A	N/A	N/A	N/A	N/A	N/A
10*16030	K	9-14-18	JOSEPH F CHMIELEWSKI AND SANDRA CHMIELEWSKI	TH EXPLORATION LLC	1/8+	906 264	N/A	N/A	N/A	N/A	N/A	N/A
10*16031	K	9-14-18	CARL J CHMIELEWSKI AND KATHLEEN A CHMIELEWSKI	TH EXPLORATION LLC	1/8+	906 266	N/A	N/A	N/A	N/A	N/A	N/A
10*16083	K	9-14-18	CECIL HARRY LILLY, III AND PAMELA KAY KNIGHT LILLY	TH EXPLORATION LLC	1/8+	912 47	N/A	N/A	N/A	N/A	N/A	N/A

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Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*16085	K	9-14-18	KATHARYN ANNETTE LILLY LAING AND FREDDIE JOE LAING	TH EXPLORATION LLC	1/8+	912 43	N/A	N/A	N/A	N/A	N/A	N/A
10*16086	K	9-14-18	KATHARYN DAY LILLY	TH EXPLORATION LLC	1/8+	906 272	N/A	N/A	N/A	N/A	N/A	N/A
10*16087	K	9-14-18	MARY PENELOPE LILLY MURPHY	TH EXPLORATION LLC	1/8+	912 41	N/A	N/A	N/A	N/A	N/A	N/A
10*16131	K	9-14-18	ERIC S DOBBS	TH EXPLORATION LLC	1/8+	902 68	N/A	N/A	N/A	N/A	N/A	N/A
10*16144	K	9-14-18	PATTIE S MADRID	TH EXPLORATION LLC	1/8+	906 278	N/A	N/A	N/A	N/A	N/A	N/A
10*16180	K	9-14-18	LARRY L CHAMBERS	TH EXPLORATION LLC	1/8+	906 280	N/A	N/A	N/A	N/A	N/A	N/A
10*16181	K	9-14-18	NORMA CHRISTINE WHIPP AND GERALD WAYNE BLACK	TH EXPLORATION LLC	1/8+	906 281	N/A	N/A	N/A	N/A	N/A	N/A
			FIRST CHRISTIAN CHURCH OF MOUNDSVILLE BY ROGER FRANCIS AND									
10*16182	K	9-14-18	ROBERT ALBERT TRUSTEES	TH EXPLORATION LLC	1/8+	906 283	N/A	N/A	N/A	N/A	N/A	N/A
10*16183	K	9-14-18	ALLEN R L DAVIS AND DIANA LEE PATTERSON	TH EXPLORATION LLC	1/8+	906 285	N/A	N/A	N/A	N/A	N/A	N/A
10*16239	K	9-14-18	ANGELA L OLDFIELD AND KENNETH W OLDFIELD	TH EXPLORATION LLC	1/8+	906 287	N/A	N/A	N/A	N/A	N/A	N/A
10*16240	K	9-14-18	BONNIE SUE PATTERSON SWISHER	TH EXPLORATION LLC	1/8+	906 289	N/A	N/A	N/A	N/A	N/A	N/A
10*16285	K	9-14-18	JOHN A SHUTZ AND CYNTHIA J SHUTZ	TH EXPLORATION LLC	1/8+	906 291	N/A	N/A	N/A	N/A	N/A	N/A
10*16441	K	9-14-18	GEORGE FRANKLIN AND NANCY ANN REED	TH EXPLORATION LLC	1/8+	924 619	N/A	N/A	N/A	N/A	N/A	N/A
10*16442	K	9-14-18	FRED T AND JERRY L CHAMBERS	TH EXPLORATION LLC	1/8+	924 174	N/A	N/A	N/A	N/A	N/A	N/A
10*16443	K	9-14-18	BARBARA BROWN CHAMBERS	TH EXPLORATION LLC	1/8+	924 621	N/A	N/A	N/A	N/A	N/A	N/A
10*16444	K	9-14-18	CATHERINE ELLEN CHAMBERS	TH EXPLORATION LLC	1/8+	924 623	N/A	N/A	N/A	N/A	N/A	N/A
10*16445	K	9-14-18	DOUGLAS C AND GWENDLYN D LEWTON	TH EXPLORATION LLC	1/8+	925 123	N/A	N/A	N/A	N/A	N/A	N/A
10*16483	K	9-14-18	JOHN C AND BARBARA H WINTER	TH EXPLORATION LLC	1/8+	924 178	N/A	N/A	N/A	N/A	N/A	N/A
10*16486	K	9-14-18	DAVID ALAN WILKINSON AND PATRICIA LYNN WILKINSON	TH EXPLORATION LLC	1/8+	924 180	N/A	N/A	N/A	N/A	N/A	N/A
10*16490	K	9-14-18	WILLIAM H AND MERRY C COTTON	TH EXPLORATION LLC	1/8+	924 176	N/A	N/A	N/A	N/A	N/A	N/A
10*16511	K	9-14-18	DOUGLAS R BOWEN	TH EXPLORATION LLC	1/8+	906 475	N/A	N/A	N/A	N/A	N/A	N/A
10*16531	K	9-14-18	KATHY DOBBS WELLS	TH EXPLORATION LLC	1/8+	906 472	N/A	N/A	N/A	N/A	N/A	N/A
10*16532	K	9-14-18	JEAN ANN MCFADDEN	TH EXPLORATION LLC	1/8+	906 459	N/A	N/A	N/A	N/A	N/A	N/A
10*16533	K	9-14-18	SHIRLEY ANN DOBBS	TH EXPLORATION LLC	1/8+	906 469	N/A	N/A	N/A	N/A	N/A	N/A
10*16534	K	9-14-18	TERRY LEE LASAVAGE	TH EXPLORATION LLC	1/8+	906 443	N/A	N/A	N/A	N/A	N/A	N/A
10*16535	K	9-14-18	CHARLES E CARSON AND MARY KAY CARSON	TH EXPLORATION LLC	1/8+	906 420	N/A	N/A	N/A	N/A	N/A	N/A
10*16537	K	9-14-18	KIM D BOWEN AND MADONNA M BOWEN	TH EXPLORATION LLC	1/8+	907 415	N/A	N/A	N/A	N/A	N/A	N/A
10*16540	K	9-14-18	JAMES A WINTER AND CONNIE G WINTER	TH EXPLORATION LLC	1/8+	924 184	N/A	N/A	N/A	N/A	N/A	N/A
10*16569	K	9-14-18	JANICE C BALE	TH EXPLORATION LLC	1/8+	907 425	N/A	N/A	N/A	N/A	N/A	N/A
10*16570	K	9-14-18	ROBERT D BOWEN AND MARCIA M R BOWEN	TH EXPLORATION LLC	1/8+	907 420	N/A	N/A	N/A	N/A	N/A	N/A
10*16576	K	9-14-18	LINDA A MINER AND MICHAEL W MINER	TH EXPLORATION LLC	1/8+	907 484	N/A	N/A	N/A	N/A	N/A	N/A
10*16580	K	9-14-18	HAROLD C MCFADDEN	TH EXPLORATION LLC	1/8+	907 480	N/A	N/A	N/A	N/A	N/A	N/A
10*16581	K	9-14-18	HELEN L SCHILLING	TH EXPLORATION LLC	1/8+	907 489	N/A	N/A	N/A	N/A	N/A	N/A
10*16582	K	9-14-18	DORA BROCK BRAMMER	TH EXPLORATION LLC	1/8+	907 429	N/A	N/A	N/A	N/A	N/A	N/A
10*16680	K	9-14-18	RONALD J AND JENNIFER CHAMBERS FICCA	TH EXPLORATION LLC	1/8+	924 186	N/A	N/A	N/A	N/A	N/A	N/A
10*16726	K	9-14-18	LESLY K WHITE	TH EXPLORATION LLC	1/8+	924 182	N/A	N/A	N/A	N/A	N/A	N/A
10*16733	K	9-14-18	SARAH L BISHOP	TH EXPLORATION LLC	1/8+	924 172	N/A	N/A	N/A	N/A	N/A	N/A
10*16835	K	9-14-18	ERNEST CARL AUGUSTINE JR	TH EXPLORATION LLC	1/8+	924 188	N/A	N/A	N/A	N/A	N/A	N/A
10*16882	K	9-14-18	JAMES LEROY AND DARLENE DOBBS OWENS	TH EXPLORATION LLC	1/8+	924 190	N/A	N/A	N/A	N/A	N/A	N/A
10*16948	K	9-14-18	FREDERICK M LEWTON	TH EXPLORATION LLC	1/8+	924 136	N/A	N/A	N/A	N/A	N/A	N/A
10*16949	K	9-14-18	STEVEN R AND BRIANNE L UTT	TH EXPLORATION LLC	1/8+	924 138	N/A	N/A	N/A	N/A	N/A	N/A
10*16950	K	9-14-18	JAY E AND CECILIA E LEWTON	TH EXPLORATION LLC	1/8+	924 134	N/A	N/A	N/A	N/A	N/A	N/A
10*16952	K	9-14-18	RUSSELL D HERVEY	TH EXPLORATION LLC	1/8+	924 132	N/A	N/A	N/A	N/A	N/A	N/A
10*16953	K	9-14-18	DONALD T AND JEAN K HOGAN	TH EXPLORATION LLC	1/8+	924 140	N/A	N/A	N/A	N/A	N/A	N/A
10*16965	K	9-14-18	WILLIAM L WRIGHT AND CAROLINA WRIGHT	TH EXPLORATION LLC	1/8+	914 524	N/A	N/A	N/A	N/A	N/A	N/A
10*16966	K	9-14-18	JOHN GILLETTE AND BARBARA GILLETTE	TH EXPLORATION LLC	1/8+	913 377	N/A	N/A	N/A	N/A	N/A	N/A
10*16967	K	9-14-18	TARA JEANNE MINOR AND JENNIFER A KNAPP	TH EXPLORATION LLC	1/8+	914 612	N/A	N/A	N/A	N/A	N/A	N/A
10*16990	K	9-14-18	ROSEMARY H BEAVERS	TH EXPLORATION LLC	1/8+	924 152	N/A	N/A	N/A	N/A	N/A	N/A
10*16992	K	9-14-18	LINDA C ABRAHAM	TH EXPLORATION LLC	1/8+	924 148	N/A	N/A	N/A	N/A	N/A	N/A
10*16993	K	9-14-18	JULIA HOOVER	TH EXPLORATION LLC	1/8+	924 150	N/A	N/A	N/A	N/A	N/A	N/A
10*16995	K	9-14-18	DIANE ELSIE RAMSEY	TH EXPLORATION LLC	1/8+	924 146	N/A	N/A	N/A	N/A	N/A	N/A
10*17129	K	9-14-18	ROBERTA JANE PARKINSON	TH EXPLORATION LLC	1/8+	924 142	N/A	N/A	N/A	N/A	N/A	N/A
10*17131	K	9-14-18	LAURA E TOTTEN AND LONNIE R TOTTEN	TH EXPLORATION LLC	1/8+	924 154	N/A	N/A	N/A	N/A	N/A	N/A

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10*17881	K	9-14-18	WAYLON L & ANGELA J MURPHEE	TH EXPLORATION, LLC	1/8+	924 555	N/A	N/A	N/A	N/A	N/A	N/A
10*17885	K	9-14-18	JOHN RUSSELL BECKER	TH EXPLORATION, LLC	1/8+	924 540	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.325.1	K	9-14-18	JUDITH A LEWANDOSKY AND ALAN E LEWANDOSKY	TH EXPLORATION LLC	1/8+	906 225	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.325.2	K	9-14-18	TIMMY LEE STOUT AND DOROTHY MARIE STOUT	TH EXPLORATION LLC	1/8+	906 222	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.325.3	K	9-14-18	NICHOLAS D PAVLIK AND GLORIA K PAVLIK	TH EXPLORATION LLC	1/8+	906 228	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.325.4	K	9-14-18	JAMES H WHITE AND RITA FRANKS WHITE	TH EXPLORATION LLC	1/8+	906 230	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.325.5	K	9-14-18	SAMUEL ALAN MCCORD AND WINIFRED A MCKEE	TH EXPLORATION LLC	1/8+	906 232	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.325.6	K	9-14-18	THOMAS O MCCORD	TH EXPLORATION LLC	1/8+	906 235	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.325.7	K	9-14-18	SHERON JONES	TH EXPLORATION LLC	1/8+	906 237	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.325.8	K	9-14-18	RICK PAVLIK	TH EXPLORATION LLC	1/8+	906 239	N/A	N/A	N/A	N/A	N/A	N/A
10*15752	L	9-15-3	KIM O CHAMBERS AND DEBRA CHAMBERS	TH EXPLORATION LLC	1/8+	906 258	N/A	N/A	N/A	N/A	N/A	N/A
10*16017	L	9-15-3	FLOYD A MCFADDEN	TH EXPLORATION LLC	1/8+	906 260	N/A	N/A	N/A	N/A	N/A	N/A
10*16018	L	9-15-3	BARBARA MCFADDEN ALBRIGHT	TH EXPLORATION LLC	1/8+	906 262	N/A	N/A	N/A	N/A	N/A	N/A
10*16144	L	9-15-3	PATTIE S MADRID	TH EXPLORATION LLC	1/8+	906 278	N/A	N/A	N/A	N/A	N/A	N/A
10*16180	L	9-15-3	LARRY L CHAMBERS	TH EXPLORATION LLC	1/8+	906 280	N/A	N/A	N/A	N/A	N/A	N/A
10*16181	L	9-15-3	NORMA CHRISTINE WHIPP AND GERALD WAYNE BLACK	TH EXPLORATION LLC	1/8+	906 281	N/A	N/A	N/A	N/A	N/A	N/A
			FIRST CHRISTIAN CHURCH OF MOUNDSVILLE BY ROGER FRANCIS AND									
10*16182	L	9-15-3	ROBERT ALBERT TRUSTEES	TH EXPLORATION LLC	1/8+	906 283	N/A	N/A	N/A	N/A	N/A	N/A
10*16239	L	9-15-3	ANGELA L OLDFIELD AND KENNETH W OLDFIELD	TH EXPLORATION LLC	1/8+	906 287	N/A	N/A	N/A	N/A	N/A	N/A
10*16285	L	9-15-3	JOHN A SHUTZ AND CYNTHIA J SHUTZ	TH EXPLORATION LLC	1/8+	906 291	N/A	N/A	N/A	N/A	N/A	N/A
10*16441	L	9-15-3	GEORGE FRANKLIN AND NANCY ANN REED	TH EXPLORATION LLC	1/8+	924 619	N/A	N/A	N/A	N/A	N/A	N/A
10*16442	L	9-15-3	FRED T AND JERRY L CHAMBERS	TH EXPLORATION LLC	1/8+	924 174	N/A	N/A	N/A	N/A	N/A	N/A
10*16443	L	9-15-3	BARBARA BROWN CHAMBERS	TH EXPLORATION LLC	1/8+	924 621	N/A	N/A	N/A	N/A	N/A	N/A
10*16444	L	9-15-3	CATHERINE ELLEN CHAMBERS	TH EXPLORATION LLC	1/8+	924 623	N/A	N/A	N/A	N/A	N/A	N/A
10*16445	L	9-15-3	DOUGLAS C AND GWENDLYN D LEWTON	TH EXPLORATION LLC	1/8+	925 123	N/A	N/A	N/A	N/A	N/A	N/A
10*16483	L	9-15-3	JOHN C AND BARBARA H WINTER	TH EXPLORATION LLC	1/8+	924 178	N/A	N/A	N/A	N/A	N/A	N/A
10*16486	L	9-15-3	DAVID ALAN WILKINSON AND PATRICIA LYNN WILKINSON	TH EXPLORATION LLC	1/8+	924 180	N/A	N/A	N/A	N/A	N/A	N/A
10*16490	L	9-15-3	WILLIAM H AND MERRY C COTTON	TH EXPLORATION LLC	1/8+	924 176	N/A	N/A	N/A	N/A	N/A	N/A
10*16498	L	9-15-3	SHELLY YEATER	TH EXPLORATION LLC	1/8+	925 283	N/A	N/A	N/A	N/A	N/A	N/A
10*16511	L	9-15-3	DOUGLAS R BOWEN	TH EXPLORATION LLC	1/8+	906 475	N/A	N/A	N/A	N/A	N/A	N/A
10*16532	L	9-15-3	JEAN ANN MCFADDEN	TH EXPLORATION LLC	1/8+	906 459	N/A	N/A	N/A	N/A	N/A	N/A
10*16534	L	9-15-3	TERRY LEE LASAVAGE	TH EXPLORATION LLC	1/8+	906 443	N/A	N/A	N/A	N/A	N/A	N/A
10*16535	L	9-15-3	CHARLES E CARSON AND MARY KAY CARSON	TH EXPLORATION LLC	1/8+	906 420	N/A	N/A	N/A	N/A	N/A	N/A
10*16537	L	9-15-3	KIM D BOWEN AND MADONNA M BOWEN	TH EXPLORATION LLC	1/8+	907 415	N/A	N/A	N/A	N/A	N/A	N/A
10*16540	L	9-15-3	JAMES A WINTER AND CONNIE G WINTER	TH EXPLORATION LLC	1/8+	924 184	N/A	N/A	N/A	N/A	N/A	N/A
10*16569	L	9-15-3	JANICE C BALE	TH EXPLORATION LLC	1/8+	907 425	N/A	N/A	N/A	N/A	N/A	N/A
10*16570	L	9-15-3	ROBERT D BOWEN AND MARCIA M R BOWEN	TH EXPLORATION LLC	1/8+	907 420	N/A	N/A	N/A	N/A	N/A	N/A
10*16576	L	9-15-3	LINDA A MINER AND MICHAEL W MINER	TH EXPLORATION LLC	1/8+	907 484	N/A	N/A	N/A	N/A	N/A	N/A
10*16580	L	9-15-3	HAROLD C MCFADDEN	TH EXPLORATION LLC	1/8+	907 480	N/A	N/A	N/A	N/A	N/A	N/A
10*16581	L	9-15-3	HELEN L SCHILLING	TH EXPLORATION LLC	1/8+	907 489	N/A	N/A	N/A	N/A	N/A	N/A
10*16582	L	9-15-3	DORA BROCK BRAMMER	TH EXPLORATION LLC	1/8+	907 429	N/A	N/A	N/A	N/A	N/A	N/A
10*16680	L	9-15-3	RONALD J AND JENNIFER CHAMBERS FICCA	TH EXPLORATION LLC	1/8+	924 186	N/A	N/A	N/A	N/A	N/A	N/A
10*16726	L	9-15-3	LESLEY K WHITE	TH EXPLORATION LLC	1/8+	924 182	N/A	N/A	N/A	N/A	N/A	N/A
10*16733	L	9-15-3	SARAH L BISHOP	TH EXPLORATION LLC	1/8+	924 172	N/A	N/A	N/A	N/A	N/A	N/A
10*16835	L	9-15-3	ERNEST CARL AUGUSTINE JR	TH EXPLORATION LLC	1/8+	924 188	N/A	N/A	N/A	N/A	N/A	N/A
10*16948	L	9-15-3	FREDERICK M LEWTON	TH EXPLORATION LLC	1/8+	924 136	N/A	N/A	N/A	N/A	N/A	N/A
10*16949	L	9-15-3	STEVEN R AND BRIANNE L UTT	TH EXPLORATION LLC	1/8+	924 138	N/A	N/A	N/A	N/A	N/A	N/A
10*16950	L	9-15-3	JAY E AND CECILIA E LEWTON	TH EXPLORATION LLC	1/8+	924 134	N/A	N/A	N/A	N/A	N/A	N/A
10*16952	L	9-15-3	RUSSELL D HERVEY	TH EXPLORATION LLC	1/8+	924 132	N/A	N/A	N/A	N/A	N/A	N/A
10*16953	L	9-15-3	DONALD T AND JEAN K HOGAN	TH EXPLORATION LLC	1/8+	924 140	N/A	N/A	N/A	N/A	N/A	N/A
10*16990	L	9-15-3	ROSEMARY H BEAVERS	TH EXPLORATION LLC	1/8+	924 152	N/A	N/A	N/A	N/A	N/A	N/A
10*16992	L	9-15-3	LINDA C ABRAHAM	TH EXPLORATION LLC	1/8+	924 148	N/A	N/A	N/A	N/A	N/A	N/A
10*16993	L	9-15-3	JULIA HOOVER	TH EXPLORATION LLC	1/8+	924 150	N/A	N/A	N/A	N/A	N/A	N/A
10*16995	L	9-15-3	DIANE ELSIE RAMSEY	TH EXPLORATION LLC	1/8+	924 146	N/A	N/A	N/A	N/A	N/A	N/A

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10*17129	L	9-15-3	ROBERTA JANE PARKINSON	TH EXPLORATION LLC	1/8+	924 142	N/A	N/A	N/A	N/A	N/A	N/A
10*17131	L	9-15-3	LAURA E TOTTEN AND LONNIE R TOTTEN	TH EXPLORATION LLC	1/8+	924 154	N/A	N/A	N/A	N/A	N/A	N/A
10*17134	L	9-15-3	UNITED CHRISTIAN MISSIONARY SOCIETY	TH EXPLORATION LLC	1/8+	924 144	N/A	N/A	N/A	N/A	N/A	N/A
10*17209	L	9-15-3	GAYLE S SHANNON	TH EXPLORATION LLC	1/8+	924 168	N/A	N/A	N/A	N/A	N/A	N/A
10*17289	L	9-15-3	HAROLD R HUNT JR AND ELIZABETH A HUNT	TH EXPLORATION LLC	1/8+	924 170	N/A	N/A	N/A	N/A	N/A	N/A
10*17396	L	9-15-3	CHRISTINE L KIDD	TH EXPLORATION LLC	1/8+	924 158	N/A	N/A	N/A	N/A	N/A	N/A
10*17413	L	9-15-3	ROBERT M CHAMBERS AND CHARLOTTE A CHAMBERS	TH EXPLORATION LLC	1/8+	924 160	N/A	N/A	N/A	N/A	N/A	N/A
10*17436	L	9-15-3	ANDREW M HOOVER AND DINAH R HOOVER	TH EXPLORATION LLC	1/8+	924 156	N/A	N/A	N/A	N/A	N/A	N/A
10*17448	L	9-15-3	FREDERICK L HERVEY AND CATHY J HERVEY	TH EXPLORATION LLC	1/8+	924 162	N/A	N/A	N/A	N/A	N/A	N/A
10*17452	L	9-15-3	ALAN H & MARY K DEGARMO	TH EXPLORATION, LLC	1/8+	924 164	N/A	N/A	N/A	N/A	N/A	N/A
10*17486	L	9-15-3	JOSELYN M KEELY	TH EXPLORATION LLC	1/8+	929 364	N/A	N/A	N/A	N/A	N/A	N/A
10*17487	L	9-15-3	DEBORAH R MOKOSH	TH EXPLORATION LLC	1/8+	924 166	N/A	N/A	N/A	N/A	N/A	N/A
10*17563	L	9-15-3	DONALD L WOOD	TH EXPLORATION LLC	1/8+	923 523	N/A	N/A	N/A	N/A	N/A	N/A
10*17617	L	9-15-3	UNITED DISCIPLES OF CHRIST CHURCH	TH EXPLORATION LLC	1/8+	924 129	N/A	N/A	N/A	N/A	N/A	N/A
10*17674	L	9-15-3	HOWARD L & BETH E WOOD	TH EXPLORATION, LLC	1/8+	923 505	N/A	N/A	N/A	N/A	N/A	N/A
10*17675	L	9-15-3	GREGORY D & CAROLYN J WIBLE	TH EXPLORATION, LLC	1/8+	923 507	N/A	N/A	N/A	N/A	N/A	N/A
10*17701	L	9-15-3	SUE ANN WORD	TH EXPLORATION, LLC	1/8+	923 470	N/A	N/A	N/A	N/A	N/A	N/A
10*17702	L	9-15-3	TAMMY BETH RAMSEY	TH EXPLORATION, LLC	1/8+	925 500	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.325.1	L	9-15-3	JUDITH A LEWANDOSKY AND ALAN E LEWANDOSKY	TH EXPLORATION LLC	1/8+	906 705	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.325.3	L	9-15-3	NICHOLAS D PAVLIK AND GLORIA K PAVLIK	TH EXPLORATION LLC	1/8+	906 228	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.325.4	L	9-15-3	JAMES H WHITE AND RITA FRANKS WHITE	TH EXPLORATION LLC	1/8+	906 230	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.325.5	L	9-15-3	SAMUEL ALAN MCCORD AND WINIFRED A MCKEE	TH EXPLORATION LLC	1/8+	906 232	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.325.6	L	9-15-3	THOMAS O MCCORD	TH EXPLORATION LLC	1/8+	906 235	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.325.7	L	9-15-3	SHERON JONES	TH EXPLORATION LLC	1/8+	906 237	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.325.8	L	9-15-3	RICK PAVLIK	TH EXPLORATION LLC	1/8+	906 239	N/A	N/A	N/A	N/A	N/A	N/A
10*17164	M	9-15-1	BETTY D VEST	TH EXPLORATION LLC	1/8+	925 141	N/A	N/A	N/A	N/A	N/A	N/A
10*17163	M	9-15-1	HOLLY JILL COHAGAN	TH EXPLORATION LLC	1/8+	925 130	N/A	N/A	N/A	N/A	N/A	N/A
10*17293	M	9-15-1	JANICE L PIETERSE	TH EXPLORATION LLC	1/8+	925 149	N/A	N/A	N/A	N/A	N/A	N/A
10*16480	M	9-15-1	JOHN D HAYES AND LYNDA SIGMON HAYES	TH EXPLORATION LLC	1/8+	925 164	N/A	N/A	N/A	N/A	N/A	N/A
10*16518	M	9-15-1	JOHN P AND ROSE HOWELL RICKEY	TH EXPLORATION LLC	1/8+	925 146	N/A	N/A	N/A	N/A	N/A	N/A
10*17165	M	9-15-1	LAURA A PETTIGREW	TH EXPLORATION LLC	1/8+	925 151	N/A	N/A	N/A	N/A	N/A	N/A
10*16739	M	9-15-1	MARK M BASSETT	TH EXPLORATION LLC	1/8+	911 78	N/A	N/A	N/A	N/A	N/A	N/A
10*16519	M	9-15-1	NORMAN B AND JO ELLEN KAUBLE	TH EXPLORATION LLC	1/8+	925 156	N/A	N/A	N/A	N/A	N/A	N/A
10*17132	M	9-15-1	OTTO J N AND LAUREL ANN KUNST	TH EXPLORATION LLC	1/8+	925 153	N/A	N/A	N/A	N/A	N/A	N/A
10*16246	M	9-15-1	R RICK HYRE	TH EXPLORATION LLC	1/8+	925 162	N/A	N/A	N/A	N/A	N/A	N/A
10*17168	M	9-15-1	RANDY K AND ALICE E BOWER	TH EXPLORATION LLC	1/8+	925 135	N/A	N/A	N/A	N/A	N/A	N/A
10*16848	M	9-15-1	RICHARD W DOUTHITT	TH EXPLORATION LLC	1/8+	925 128	N/A	N/A	N/A	N/A	N/A	N/A
10*16482	M	9-15-1	SAMUEL J RICKEY	TH EXPLORATION LLC	1/8+	925 143	N/A	N/A	N/A	N/A	N/A	N/A
10*17768	M	9-15-1	SHERI L EVRAETS	TH EXPLORATION, LLC	1/8+	925 125	N/A	N/A	N/A	N/A	N/A	N/A
10*17332	M	9-15-1	TODD W BULLARD AND BETH H BULLARD	TH EXPLORATION LLC	1/8+	925 132	N/A	N/A	N/A	N/A	N/A	N/A
10*17621	M	9-15-1	WILLIAM M BECKER AND KATHARINE B BECKER	TH EXPLORATION LLC	1/8+	925 138	N/A	N/A	N/A	N/A	N/A	N/A
10*16897	M	9-15-1	WILLIAM W AND NOREEN M HYRE	TH EXPLORATION LLC	1/8+	925 159	N/A	N/A	N/A	N/A	N/A	N/A
10*15520	N	9-14-19	ELIZABETH ANN STRAUSBAUGH	CHESAPEAKE APPALACHIA LLC	1/8+	703 578	Chesapeake to Statoil: 29/325	Chesapeake to SWN Prod: 33/110	Statoil to SWN Exchange: 33/424	Merger - SWN Exchange TitleHolder LLC & SWN Production Company LLC: 19/624	Statoil to Tug Hill: 36/455	SWN Prod to Tug Hill: 36/431
10*15815	N	9-14-19	FORREST M THOMAS	CHESAPEAKE APPALACHIA LLC	1/8+	694 516	Chesapeake to Statoil: 23/479	Chesapeake to SWN Prod: 33/110	Statoil to SWN Exchange: 33/424	Merger - SWN Exchange TitleHolder LLC & SWN Production Company LLC: 19/624	Statoil to Tug Hill: 36/455	SWN Prod to Tug Hill: 36/431
10*17445	N	9-14-19	GENEVA BASSETT SANCHEZ	TH EXPLORATION LLC	1/8+	929 292	N/A	N/A	N/A	N/A	N/A	N/A

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10*15819	N	9-14-19	JANET LEA BLANKENSHIP	CHESAPEAKE APPALACHIA LLC	1/8+	708 114	Chesapeake to Statoil: 29/325	Chesapeake to SWN Prod: 33/110	Statoil to SWN Exchange: 33/424	Merger - SWN Exchange TitleHolder LLC & SWN Production Company LLC: 19/624	Statoil to Tug Hill: 36/455	SWN Prod to Tug Hill: 36/431
10*15814	N	9-14-19	MARY E BASSETT	CHESAPEAKE APPALACHIA LLC	1/8+	694 499	Chesapeake to Statoil: 24/84	Chesapeake to SWN Prod: 33/110	Statoil to SWN Exchange: 33/424	Merger - SWN Exchange TitleHolder LLC & SWN Production Company LLC: 19/624	Statoil to Tug Hill: 36/455	SWN Prod to Tug Hill: 36/431
10*15813	N	9-14-19	ROBERT B THOMAS	CHESAPEAKE APPALACHIA LLC	1/8+	692 235	Chesapeake to Statoil: 32/247	Chesapeake to SWN Prod: 33/110	Statoil to SWN Exchange: 33/424	Merger - SWN Exchange TitleHolder LLC & SWN Production Company LLC: 19/624	Statoil to Tug Hill: 36/455	SWN Prod to Tug Hill: 36/431
10*15817	N	9-14-19	RUTH MEADOWS	CHESAPEAKE APPALACHIA LLC	1/8+	703 583	Chesapeake to Statoil: 29/325	Chesapeake to SWN Prod: 33/110	Statoil to SWN Exchange: 33/424	Merger - SWN Exchange TitleHolder LLC & SWN Production Company LLC: 19/624	Statoil to Tug Hill: 36/455	SWN Prod to Tug Hill: 36/431
10*15816	N	9-14-19	SALLY CYNTHIA HOPKINS	CHESAPEAKE APPALACHIA LLC	1/8+	697 116	Chesapeake to Statoil: 23/512	Chesapeake to SWN Prod: 33/110	Statoil to SWN Exchange: 33/424	Merger - SWN Exchange TitleHolder LLC & SWN Production Company LLC: 19/624	Statoil to Tug Hill: 36/455	SWN Prod to Tug Hill: 36/431
10*15818	O	9-15-16	ELIZABETH ANN STRAUSBAUGH	CHESAPEAKE APPALACHIA LLC	1/8+	703 578	Chesapeake to Statoil: 29/325	Chesapeake to SWN Prod: 33/110	Statoil to SWN Exchange: 33/424	Merger - SWN Exchange TitleHolder LLC & SWN Production Company LLC: 19/624	Statoil to Tug Hill: 36/455	SWN Prod to Tug Hill: 36/431
10*15815	O	9-15-16	FORREST M THOMAS	CHESAPEAKE APPALACHIA LLC	1/8+	694 516	Chesapeake to Statoil: 23/479	Chesapeake to SWN Prod: 33/110	Statoil to SWN Exchange: 33/424	Merger - SWN Exchange TitleHolder LLC & SWN Production Company LLC: 19/624	Statoil to Tug Hill: 36/455	SWN Prod to Tug Hill: 36/431
10*17445	O	9-15-16	GENEVA BASSETT SANCHEZ	TH EXPLORATION LLC	1/8+	929 292	N/A	N/A	N/A	N/A	N/A	N/A
10*15819	O	9-15-16	JANET LEA BLANKENSHIP	CHESAPEAKE APPALACHIA LLC	1/8+	708 114	Chesapeake to Statoil: 29/325	Chesapeake to SWN Prod: 33/110	Statoil to SWN Exchange: 33/424	Merger - SWN Exchange TitleHolder LLC & SWN Production Company LLC: 19/624	Statoil to Tug Hill: 36/455	SWN Prod to Tug Hill: 36/431
10*15814	O	9-15-16	MARY E BASSETT	CHESAPEAKE APPALACHIA LLC	1/8+	694 499	Chesapeake to Statoil: 24/84	Chesapeake to SWN Prod: 33/110	Statoil to SWN Exchange: 33/424	Merger - SWN Exchange TitleHolder LLC & SWN Production Company LLC: 19/624	Statoil to Tug Hill: 36/455	SWN Prod to Tug Hill: 36/431
10*15813	O	9-15-16	ROBERT B THOMAS	CHESAPEAKE APPALACHIA LLC	1/8+	692 235	Chesapeake to Statoil: 32/247	Chesapeake to SWN Prod: 33/110	Statoil to SWN Exchange: 33/424	Merger - SWN Exchange TitleHolder LLC & SWN Production Company LLC: 19/624	Statoil to Tug Hill: 36/455	SWN Prod to Tug Hill: 36/431
10*15817	O	9-15-16	RUTH MEADOWS	CHESAPEAKE APPALACHIA LLC	1/8+	703 583	Chesapeake to Statoil: 29/325	Chesapeake to SWN Prod: 33/110	Statoil to SWN Exchange: 33/424	Merger - SWN Exchange TitleHolder LLC & SWN Production Company LLC: 19/624	Statoil to Tug Hill: 36/455	SWN Prod to Tug Hill: 36/431
10*15816	O	9-15-16	SALLY CYNTHIA HOPKINS	CHESAPEAKE APPALACHIA LLC	1/8+	697 116	Chesapeake to Statoil: 23/512	Chesapeake to SWN Prod: 33/110	Statoil to SWN Exchange: 33/424	Merger - SWN Exchange TitleHolder LLC & SWN Production Company LLC: 19/624	Statoil to Tug Hill: 36/455	SWN Prod to Tug Hill: 36/431
10*19533	P	9-15-15	LEONARD F DAVIS SR AND LINDA K DAVIS	TH EXPLORATION LLC	1/8+	937 308	N/A	N/A	N/A	N/A	N/A	N/A

APR 3 2018
 Environmental Protection
 Department of



3/28/18

Well Site Safety Plan

Tug Hill Operating, LLC

Well Name: Heaven Hill 3-2HM

Pad Location: Heaven Hill 3

Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:
Northing-4,406,558.15
Easting -526,254.70

March 2018

STATE OF WEST VIRGINIA §
§
COUNTY OF MARSHALL §

Jan Pest
MARSHALL County 12:43:01 PM
Instrument No 1404876
Date Recorded 05/20/2016
Document Type ASN
Pages Recorded 20
Book-Page 36-148
Recording Fee \$20.00
Additional \$8.00

ASSIGNMENT AND CONVEYANCE

THIS ASSIGNMENT AND CONVEYANCE (the "Assignment") is made and entered into this 17th day of May, 2016 (the "Effective Date"), by and between CHEVRON U.S.A. INC. (hereinafter "Assignor") and TH EXPLORATION, LLC (hereinafter "Assignee") pursuant to the terms of that certain Acreage Trade Agreement between the Assignor and the Assignee dated May 2, 2016 (the "Acreage Trade Agreement"). Capitalized terms used but not defined herein and defined in the Acreage Trade Agreement shall have the meanings given to such terms in the Acreage Trade Agreement.

WITNESSETH:

WHEREAS, Assignor desires to assign, set over, and transfer to Assignee all of Assignor's right, title, and interest in and to those certain Oil and Gas Leases situated in Marshall County, West Virginia, as described in Exhibit "A", and as depicted in Exhibits "A-1" and "A-2", attached hereto and made a part hereof (hereinafter the "Leases"); and

WHEREAS, Assignor desires to assign, set over, and transfer to Assignee all of Assignor's right, title, and interest in and to the Leases as described below.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, and subject to the limited warranties, restrictions and conditions hereinafter mentioned, the parties hereto, intending to be legally bound, do covenant and agree as follows:

1. Assignment. Assignor does hereby grant, bargain, sell, convey, deliver, assign, set over and transfer, as of the Effective Date, to Assignee, its respective successors and assigns, forever, all of Assignor's right, title and interest in and to the Leases, and the lands covered thereby, together with all rights incident thereto and appurtenances thereon, except that Assignor accepts and reserves from this Assignment the Chevron ORRI previously conveyed to Assignor and as described in that certain Memorandum of Assignment of Oil and Gas Lease Interests dated November 6, 2012 by and between Cornell Holdings Incorporated and Chevron U.S.A. Inc., which is recorded at Book 0028, Page 0239 in the Office of the County Clerk of Marshall County, West Virginia.

TO HAVE AND TO HOLD such right, title and interest in and to the Leases unto Assignee or its designee, and their respective successors and assigns, forever, in accordance with the provisions of this Assignment.

2. Special Warranty. Assignor represents and warrants that Assignor has not conveyed or otherwise encumbered (other than Permitted Encumbrances) its interest in the Conveyed Interests since the time that Assignor obtained its interests in the Leases. Assignor does covenant, promise and agree, to and with the Assignee, its respective successors and assigns, to forever specially warrant and defend the title to the Leases or portions thereof included under this Assignment, unto the Assignee and its respective successors and assigns, against the lawful claims of Assignor, and all persons claiming, or to claim, the same or any part thereof, by, through or under Assignor.

217
f. n. n. w.

7,476' T.H.

2,207 B.H.

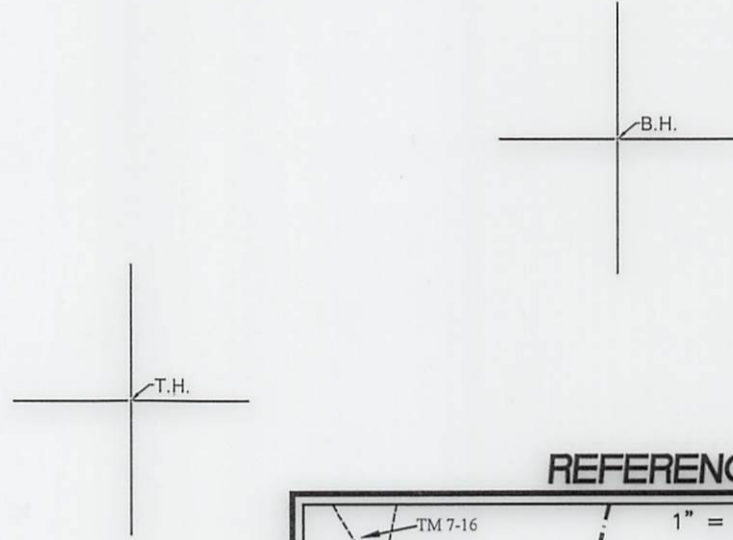
**HEAVEN HILL 3 LEASE
WELL 2HM
TUG HILL OPERATING**

T.H. LATITUDE 39°50'00"
B.H. LATITUDE 39°47'30"

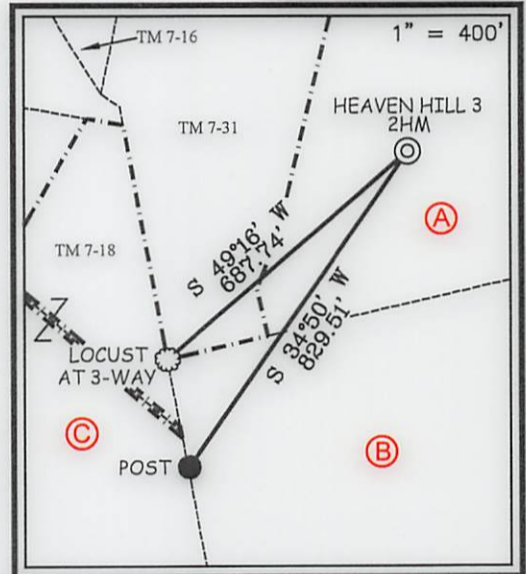
(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)			
NAD'83 S.P.C.(FT)	N. 478,856.74	E. 1,633,284.15	
NAD'83 GEO.	LAT-(N) 39.808592	LONG-(W) 80.693278	
NAD'83 UTM (M)	N. 4,406,558.15	E. 526,254.70	
LANDING POINT			
NAD'83 S.P.C.(FT)	N. 476,368.5	E. 1,632,927.6	
NAD'83 GEO.	LAT-(N) 39.801749	LONG-(W) 80.694429	
NAD'83 UTM (M)	N. 4,405,798.3	E. 526,158.8	
BOTTOM HOLE			
NAD'83 S.P.C.(FT)	N. 466,439.2	E. 1,638,391.8	
NAD'83 GEO.	LAT-(N) 39.774689	LONG-(W) 80.674520	
NAD'83 UTM (M)	N. 4,402,801.1	E. 527,874.0	

T.H. LONGITUDE 80°40'00"
B.H. LONGITUDE 80°40'00"

6,184' B.H.
9,013' T.H.



REFERENCES



NOTES ON SURVEY

1. NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
2. WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'



I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION

P.S. 677

Gregory A. Smith



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

DATE JUNE 30, 20 17

REVISED FEBRUARY 2, 2018 & MARCH 22, 2018

OPERATORS WELL NO. HEAVEN HILL 3-2HM

API WELL NO. 47-051-01962 MOD H6A
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8654P2HMR2.dwg
SCALE 1" = 2000'

HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK)

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS



WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL IF "GAS" PRODUCTION STORAGE DEEP SHALLOW

LOCATION: ELEVATION GROUND = 1,341.3' PROPOSED = 1,326.35' WATERSHED LOWER BOWMAN RUN OF FISH CREEK (HUC 10)

DISTRICT MEADE COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5'

SURFACE OWNER RICKY L. WHITLATCH ACREAGE 72.82±

ROYALTY OWNER RICKY L. WHITLATCH, ET AL - SEE WW-6A1 ACREAGE 72.82±

PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT AND REPLUG OTHER

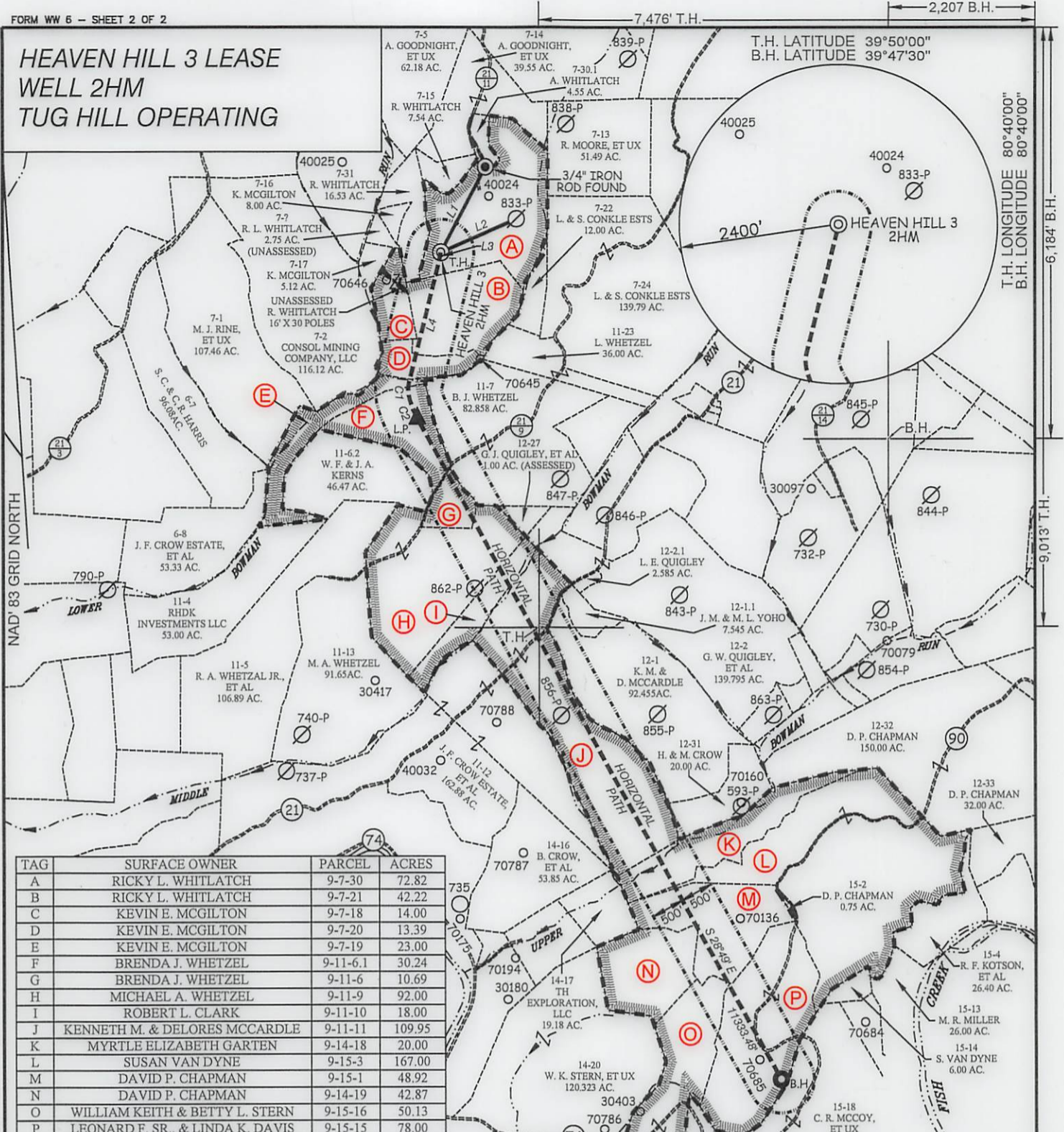
PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION MARCELLUS
ESTIMATED DEPTH TVD: 6,876' / TMD: 19,081'

WELL OPERATOR TUG HILL OPERATING, LLC
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 FORT WORTH, TX 76107

DESIGNATED AGENT DIANNA STAMPER CT CORPORATION SYSTEM
ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313

COUNTY NAME
PERMIT

**HEAVEN HILL 3 LEASE
WELL 2HM
TUG HILL OPERATING**



TAG	SURFACE OWNER	PARCEL	ACRES
A	RICKY L. WHITLATCH	9-7-30	72.82
B	RICKY L. WHITLATCH	9-7-21	42.22
C	KEVIN E. MCGILTON	9-7-18	14.00
D	KEVIN E. MCGILTON	9-7-20	13.39
E	KEVIN E. MCGILTON	9-7-19	23.00
F	BRENDA J. WHETZEL	9-11-6.1	30.24
G	BRENDA J. WHETZEL	9-11-6	10.69
H	MICHAEL A. WHETZEL	9-11-9	92.00
I	ROBERT L. CLARK	9-11-10	18.00
J	KENNETH M. & DELORES MCCARDLE	9-11-11	109.95
K	MYRTLE ELIZABETH GARTEN	9-14-18	20.00
L	SUSAN VAN DYNE	9-15-3	167.00
M	DAVID P. CHAPMAN	9-15-1	48.92
N	DAVID P. CHAPMAN	9-14-19	42.87
O	WILLIAM KEITH & BETTY L. STERN	9-15-16	50.13
P	LEONARD F. SR., & LINDA K. DAVIS	9-15-15	78.00

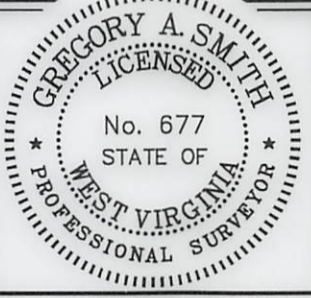
SLS
Land & Energy Development
Solutions from the ground up.
P.O. Box 150 | 12 Vanhorn Drive | Glenville, WV 26031 | (304) 462-5634
www.slsurveys.com

P.S. 677
Gregory A. Smith

LINE	BEARING	DISTANCE
L1	N 27°40' E	1446.57'
L2	N 66°12' E	1244.40'
L3	S 11°02' W	122.24'
L4	S 14°01' W	1906.87'

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	256.98'	546.11'	S 04°15' E	254.62'
C2	286.75'	1264.63'	S 22°34' E	286.13'

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)
 NAD'83 S.P.C.(FT) N. 478,856.74 E. 1,633,284.15
 NAD'83 GEO. LAT-(N) 39.808592 LONG-(W) 80.693278
 NAD'83 UTM (M) N. 4,406,558.15 E. 526,254.70
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 NAD'83 UTM (M) N. 4,405,798.3 E. 526,158.8
BOTTOM HOLE
 NAD'83 S.P.C.(FT) N. 486,439.2 E. 1,638,391.8
 NAD'83 GEO. LAT-(N) 39.774689 LONG-(W) 80.674520
 NAD'83 UTM (M) N. 4,402,801.1 E. 527,874.0



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

SCALE 1" = 2000' FILE NO. 8654P2HMR2.dwg
 DATE JUNE 30, 20 17
 REVISED FEBRUARY 2, 2018 & MARCH 22, 2018
 OPERATORS WELL NO. HEAVEN HILL 3-2HM
 API WELL NO. 47 — 051 — 01962
 STATE COUNTY PERMIT

STATE OF WEST VIRGINIA
 DIVISION OF ENVIRONMENTAL PROTECTION
 OFFICE OF OIL AND GAS

LEGEND

- LEASE LINE
- SURFACE LINE
- WELL LATERAL
- OFFSET LINE
- TIE LINE
- CREEK
- ROAD
- COUNTY ROUTE
- PROPOSED WELL
- EXISTING WELL
- PERMITTED WELL
- TAX MAP-PARCEL
- LEASE # (SEE WW-6A1)
- SURFACE OWNER (SEE TABLE)

WELL OPERATOR TUG HILL OPERATING, LLC ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 FORT WORTH, TX 76107
 DESIGNATED AGENT DIANNA STAMPER CT CORPORATION SYSTEM ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313